

Adaptable Single Active Loop Thermal Control System (TCS) for Future Space Missions

Completed Technology Project (2013 - 2016)



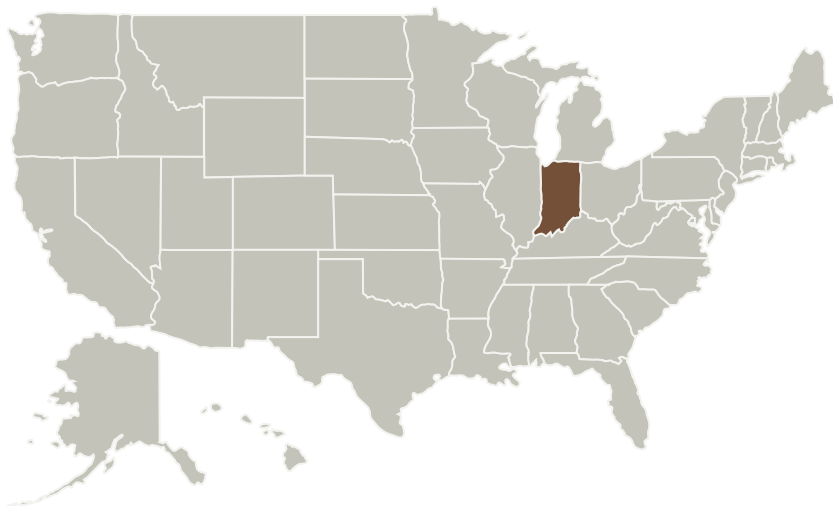
Project Introduction

The primary objectives of this study are to develop (1) a fundamental understanding of two-phase transport phenomena and (2) design concepts for a thermal control system (TCS) for future space missions. The proposed system architecture will enable the TCS to be reconfigured during the various mission phases to respond, not only to varying heat load, but to heat rejection temperature as well.

Anticipated Benefits

The proposed system architecture will enable the thermal control system (TCS) to be reconfigured during the various mission phases to respond, not only to varying heat load, but to heat rejection temperature as well.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Purdue University-Main Campus	Supporting Organization	Academia	West Lafayette, Indiana



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Responsible Program:

Space Technology Research Grants

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Primary U.S. Work Locations

Indiana

Project Website:

<https://www.nasa.gov/directorates/spacetech/home/index.html>

Project Management

Program Director:

Claudia M Meyer

Program Manager:

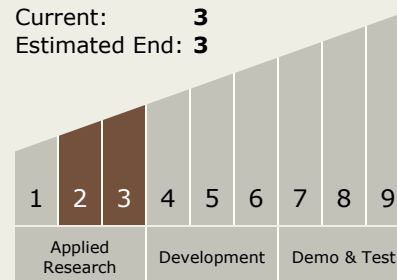
Hung D Nguyen

Principal Investigator:

Issam Mudawar

Technology Maturity (TRL)

Start: 2
Current: 3
Estimated End: 3



Technology Areas

Primary:

- TX14 Thermal Management Systems
 - └ TX14.2 Thermal Control Components and Systems
 - └ TX14.2.3 Heat Rejection and Storage